

Journal of Mycology

VOLUME 8 — JUNE 1902

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MORCHELLAE — THE MORELS

A. P. MORGAN.

With plentiful showers in the springtime the Morels grow abundantly in my vicinity. I have observed them critically for many years and have taken much pains to recognize as many as possible of the species that have been described. I invariably arrive at the same conclusion: that there are but two species. In the same spots the species vary much in form, size and color from year to year in accordance with the difference in warmth, sunshine and shower. The spores vary somewhat in different specimens but there is nothing characteristic in their variation. No paraphyses are present in the hymenium of either species; I do not recognize immature or undeveloped asci as paraphyses.

My bundles of specimens gathered in different years bear a variety of labels as I look them over, but they are all assembled in my mind under two names: The first is *MORCHELLA ESCULENTA*, the second *MORCHELLA PATULA*; in the first the pileus is wholly adnate to the apex of the stipe; in the second the lower part of the pileus is separate from the stipe. The difference in the plants under each species do not seem to me sufficient to establish good varieties even.

Judging by the plants growing in this region I venture to present the synonymy of the two species as follows:

I. *MORCHELLA ESCULENTA*.

- | | |
|--|---|
| 1. <i>Boletus esculentus rugosus</i> , etc.,
Tournefort, I. R. H. 1719. | 3. <i>Morchella esculenta</i> .
Persoon. Tent. disp. 1797. |
| 2. <i>Phallus esculentus</i> .
Linnaeus, Sp. Plant. 1753. | 4. <i>Phallus crassipes</i>
Ventenat. Diss. Ph. 1798. |

- | | |
|--|---|
| 5. <i>Morchella conica</i> .
Persoon, Champ. com. 1818. | 8. <i>Morchella distans</i> .
Fries. S. V. Scand. 1849. |
| 6. <i>Morchella deliciosa</i> .
<i>Morchella elata</i> .
Fries. Syst. Myc. 1823. | 9. <i>Morchella angusticeps</i> .
Peck. Bulletin N. Y. Mus.
1887. |
| 7. <i>Morchella prierosa</i> .
Krombholz. Schw. 183-. | |

II. MORCHELLA PATULA.

- | | |
|---|---|
| 1. <i>Phallus, capitulo conico, subtus</i>
patente, etc.
Gleditsch. Meth. Fung. 1753. | 4. <i>Helvella hybrida</i> .
Sowerby, Eng. Fung. 1799. |
| 2. <i>Phallus patulus</i> .
Schränk, Baier. Fl. 1789.
Gmelin. Syst. Nat. 1791. | 5. <i>Morchella semilibera</i> .
<i>Morchella rimosipes</i> .
Lam. & Dec. Fl. Fr. 1805. |
| 3. <i>Phallus squamosus</i> .
Ventenat. Diss. Ph. 1798. | 6. <i>Morchella fusca</i> .
Persoon. Myc. Eur. 1822. |

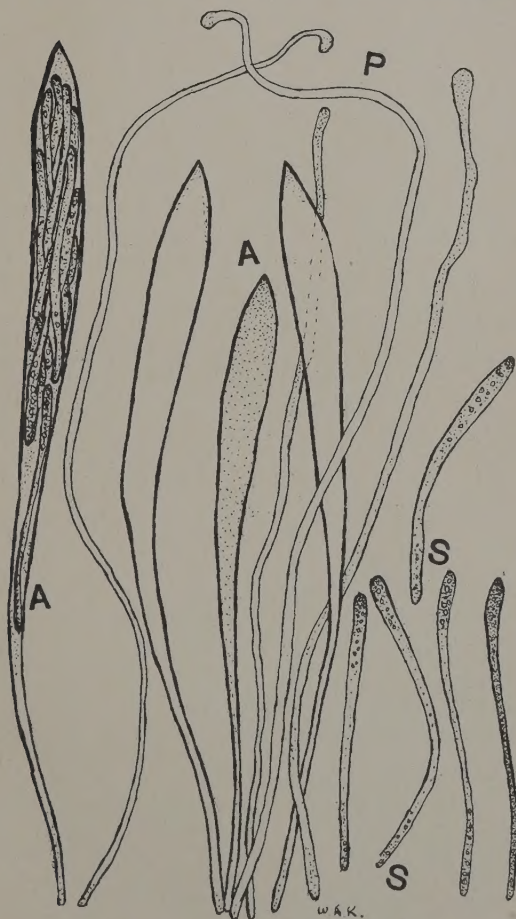
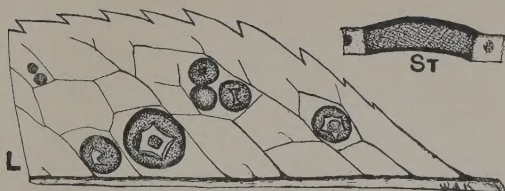
If any mycologist can dress one or more of these synonyms up in proper specific characters, I will be pleased to see it done.

A NEW SPECIES OF RHYTISMA

W. A. KELLERMAN.

At West Mansfield, Logan County, Ohio, July, 1901, a thicket several acres in extent of *Ilex verticillata* was inspected and found to be universally and abundantly affected with a *Rhytisma*, which though immature seemed to be an undescribed species. Specimens representing the stage are issued in Ohio Fungi, No. 76. Mr. Ellis received the same form immature from Professor Carver, 292, on the same host (apparently), at Tuskegee, Alabama. He also says: "In the specimens issued in N. A. F. 3134, and F. Col. 535 collected on the same host in Vigo County, Indiana, by Professor Underwood, the stromata are amphigenous but more prominent below, instead of being *concave*, a character not found in any other species of *Rhytisma* on *Ilex*."

The accompanying figures illustrate the important characters of the form in question. At St. in Plate I is shown a diagrammatic transverse-section in which the concavity of the underside of the stroma is pronounced. On the leaf in the same figure are shown a number of stromata of varying sizes, most of which are ruptured above in the somewhat regular manner. Figures represent the characteristic asci (A), accompanied by the slender elongated paraphyses (P). The ascus to the left contains ascospores, the others are empty or immature. The spores are also shown on the same Plate (S). Mature speci-



Rhytisma concavum Ell. & Kellerm. sp. n.

mens were obtained early in June 1902, and are issued simultaneously in Ohio F., No. 75.

The technical description of the proposed species is as follows:

RHYTISMA CONCAVUM Ell. & Kellerm. n. sp. — Stromata epiphyllous but also visible below, forming thin, black, thickly scattered blotches, 1-4 mm. diameter, orbicular or subangular, the surface uneven, surrounded by a pale yellowish, narrow margin, more or less concave below and the margin broader and paler, at maturity rupturing by radiating fissures, in the oblong forms a central elongated fissure also occurring and in the larger ones a circular area being cut out, the hygroscopic lobes strongly recurved when moist exposing a light yellowish, later sordid yellow then blackish disk. Asci 80-110 x 8-10 μ , oblanceolate, much elongated below, strongly acute at the apex, accompanied by abundant slender and at the tips. Spores 20-35 x 2-3 μ hyaline, nearly straight to strongly elongated mostly flexuous paraphyses about 4 μ wide, usually enlarged curved, slightly thicker at one end in which are large clear granules.

On leaves of *Ilex verticillata*; spores mature in June. Type specimen in Herb. W. A. Kellerman.

CULTURES OF UREDINEAE IN 1900 AND 1901

BY J. C. ARTHUR.

The first especially important cultures of plant rusts made by the writer were conducted in 1899, and the results published in the Botanical Gazette for April 1900 (29:268-276). During the two following years only a small number of cultures were made, and for a number of reasons the results have not been put into type until now. This article is, therefore, the second of the series.

The method pursued in most cases in making the cultures has been stated in the preceding article. It was, in brief, to remove spores with a knife from the host, and place them on a dampened plant which it is desired to infect. The plants are grown in pots. After the spores are sown the whole plant is covered with a belljar and kept shaded for a day, or sometimes two days. The plants are then uncovered and placed on a greenhouse bench, where they remain until the period of observation is ended.

In 1900 the only cultures made that require mention were with *Euphorbia* rust. The results supplement and confirm those made in 1899 (Bot. Gaz. 29:270-271). It was again found that spores from *Euphorbia nutans* would grow upon the same species, but not upon *E. maculata*. It seems quite probable that this rust, *Uromyces euphorbiae* C. & P. possesses specialized forms. The record is as follows:

July 21, Aecidiospores from *Euphorbia nutans* sown on *E. nutans*; July 30, uredo.

July 21, Aecidiospores from *E. nutans* sown on *E. maculata*; no infection.

July 21, Uredospores from *E. nutans* sown on *E. nutans*; July 31, uredo.

July 21, Uredospores from *E. nutans* sown on *E. maculata*; no infection.

There are two ways in which the right species of plant may be selected on which to make a sowing of a heteroecious rust. One is to sow upon any species known to harbor an aecidium, hoping after making a smaller or larger number of tests to hit upon the right one. This method in my own work has led to very meagre results, so slight, in fact, as scarcely to be worth the trouble. During 1901 the following rusts were tried in this blind way, all being very common forms in this vicinity, only to ascertain that wrong plants were selected for the sowings or else the spores did not gain entrance possibly through defective treatment.

Puccinia emaculata Schw. on *Panicum capillare* was sown twice on *Onagra biennis*, with no infection.

Puccinia caricina DC. A form of this aggregate on *Carex tetanica* was sown on *Erigeron annuus* and *Onagra biennis*, with no infection.

Puccinia atkinsoniana Diet. on *Carex lurida*. The name of this species was unknown at the time the cultures were made, but through the kindness of Professor Atkinson, it has since been compared with type material and its status definitely settled. It was sown on *Aster cordifolius*, *Aster paniculatus*, *Solidago serotina*, *Xanthium canadense*, *Ambrosia trifida*, *Impatiens aurea* and *Ribes cynosbati*, with no infection.

Puccinia peckii (DeT.) Kellerm. on *Carex trichocarpa*. The names of both host and rust were unknown at the time the cultures were made. The host has since been found in fruit, and the rust has been successfully grown by Professor Kellerman and also the writer, as recorded in the preceding number of this Journal (8:20). Spores were sown on *Aster cordifolius*, *Aster paniculatus*, *Solidago serotina*, *Solidago canadensis*, *Ribes cynosbati*, *Erigeron annuus*, and *Eupatorium perfoliatum*, with no infection.

Puccinia rubigo-vera DC. A form of this aggregate of *Bromus ciliatus* was sown on *Hepatica acuta* and *Viola cucullata*, with no infection.

During 1901 the culture of seven species was successfully carried out. Three of these were in confirmation of previous work, as follows:

Puccinia caricis (Schum.) Reb. April 25, teleutospores from *Carex stricta* were sown on *Urtica gracilis*; May 2, spermogonia appeared, and May 5, æcidia.

Puccinia angustata Pk. May 3, teleutospores from *Scirpus atrovirens* were sown on *Lycopus americanus*; May 11, *Spermogonia* appeared, and May 20, aecidia.

Puccinia poculiformis (Jacq.) Wettst. May 2, teleutospores from *Cinna arundinacea* were sown on *Berberis vulgaris*; May 13, *spermogonia* appeared, and May 22, aecidia.

Of the remaining four species, all *Carex* rusts, the clues which led to successful cultures were obtained in the field, and have been mentioned and explained in an article in the *Botanical Gazette* for January of the present year. For three of these species it seems necessary to propose new names. All are yet insufficiently studied to determine their exact boundaries.

PUCCINIA ALBIPERIDIA sp. nov.

O. *Spermogonia* amphigenous, small, pale orange.

I. Aecidia hypophyllous, small in circular clusters; substratum scarcely thickened; peridia white, low, margin incised, reflexed; spores pale yellow when fresh, subglobose, 15-20 μ in diameter; wall thin, smooth.

II. Uredosori hypophyllous, small, round or oblong, soon naked; uredospores oblong, small, echinulate.

III. Teleutosori hypophyllous, globose or oblong, pulvinate, dark brown. Teleutospores oblong-cuneate, 17-24 by 32-45 μ ; apex semi-circular or obtuse, thickened to half the length of the upper cell; side walls thin, slightly or not constricted; pedicel slender, colored, as long as the spore or shorter.

On *Ribes cynosbati* L. grown June, 1901 from teleutospores collected on *Carex pubescens* Muhl, Lafayette, Ind., April 30, 1901.

This species is characterized by the white or nearly white aecidia, which may be called *Aecidium albiperidium*. They are in marked contrast with the deep orange aecidia that are so abundant throughout North America on various species of *Ribes*. The only field collection known to the writer is one on *Ribes gracile* made at Decorah, Iowa, by E. W. D. Holway on June 2, 1901. When dry and faded the two forms of aecidia are much alike. Cultures were made as follows:

May 16, teleutospores from *Carex pubescens* sown on *Aster paniculatus*; no infection.

May —, teleutospores from *Carex pubescens* sown on *Ribes cynosbati*; May 30, *spermogonia*; June 9, aecidia.

PUCCINIA CARICIS-ERIGERONTIS sp. nov.

O. *Spermogonia* epiphyllous, prominent, golden yellow.

I. Aecidia hypophyllous, in circular clusters; substratum slightly thickened; peridia short, much divided and recurved; aecidiospores yellow when fresh, isodiametric, 12-15 μ in diameter, wall thin, minutely tuberculate.

II. Uredosori hypophyllous, small, oblong, tardily naked; uredospores brownish-yellow when fresh, oval or obovate, small, 12-18 by 16-22 μ wall thin, thickly echinulate, pores 3 or 4 scattered.

III. Teleutosori hypophyllous, small, oblong, pulvinate, blackish brown, ruptured epidermis evident; teleutospores clavate or oblong-clavate, 14-20 by 35-42 μ ; septum above the middle; apex obtuse or truncate, much thickened; side walls thin; pedicel firm; colored, one fourth or one half the length of the spore.

On *Erigeron annuus* (L.) Pers. and *Carex festucacea* Willd., Lafayette, Ind.

This species is without doubt the *Caeoma* (*Aecidium*) *erigeronatum* Schw. (Trans. Amer. Phil. Soc. 4:292), and probably occurs on many species of *Erigeron* throughout North America. Cultures were made as follows:

April 25, teleutospores from *Carex festucacea* sown on *Erigeron annuus*; May 2, spermogonia; May 11, aecidia.

April 25, teleutospores from *C. festucacea* sown on *Taraxacum taraxacum*; no infection.

PUCCINIA CARICIS-ASTERIS sp. nov.

O. Spermogonia epiphyllous, yellow, punctiform, sunken in tissue of the leaf.

I. Aecidia hypophyllous, collected in groups on slightly swollen yellow or purplish spots, low, margin much divided and recurved; aecidiospores subglobose, 12-17 μ in diameter, wall thin, minutely roughened.

II. Uredosori hypophyllous, oblong; uredospores oblong or obovate, 12-16 by 18-22 μ ; wall thin, echinulate; pores few, scattered.

III. Teleutosori hypophyllous, oblong to oblong-linear, prominent, soon naked, dark brown, ruptured epidermis noticeable; teleutospores oblong or clavate-oblong, 16-22 by 48-56 μ ; apex rounded, greatly thickened; pedicel slender, colored, half the length of the spore.

On *Aster paniculatus* Lam., *Aster cordifolius* L. and *Carex foenea* Willd. The latter collected at Decorah, Iowa, Dec. 30, 1900 by E. W. D. Holway, and at Lafayette, Ind., April 30, 1901, by the writer.

The common aecidium, found on many species of *Aster*, is probably included in this species, but not the aecidia found on *Erigeron*, *Solidago* or *Geranium*. It is the same as *Aecidium asterum* Schw. The uredospores and teleutospores are very similar to those of the preceding species, and are suggestive of biological species. Much work, however, must be done before an approximately accurate statement can be made regarding the *Carex* species having aecidia upon Compositae. Data for the present separation was obtained as follows:

April 25, teleutospores from *Carex foenea* (Iowa) sown on *Erigeron annuus*; no infection.

April 29, teleutospores from *C. foenea* (Iowa) sown on *Erigeron annuus*; no infection.

May 4, teleutospores from *C. foenea* (Indiana) sown on *Aster paniculatus*; May 13, spermogonia; May 22, aecidia.

May 4, teleutospores from *C. foenea* (Indiana) sown on *Erigeron annuus*; no infection.

May 11, teleutospores from *C. foenea* (Indiana) sown on *Geranium maculatum*; no infection.

May 11, teleutospores from *C. foenea* (Iowa) sown on *Erigeron annuus*; no infection.

May 13, teleutospores from *C. foenea* (Iowa) sown on *Aster paniculatus*; May 20, spermogonia; May 28, aecidia.

May 13, Teleutospores from *C. foenea* (Iowa) sown on *Solidago canadensis*; no infection.

May 13, teleutospores from *C. foenea* (Indiana) sown on *Aster cordifolius*; May 23, spermogonia; May 30, aecidia.

May 13, teleutospores from *C. foenea* (Indiana) sown on *Solidago canadensis*; no infection.

PUCCINIA BOLLEYANA SACC.

This species is first mentioned in the Amer. Mo. Micr. Journal for 1889 (10:169), with an illustration but no description. It was first described in Saccardo's Sylloge (9:303), two years later. It was collected originally on a sterile sedge, presumably a *Carex*, growing from two to four feet high. The type locality is within two miles of Lafayette, Ind., and only an area ten or fifteen feet across supports the sedge, but almost every leaf over this area has been thickly covered with the rust each season since its discovery. Last year it was found in another locality about four miles distant. It has not been reported from any other place in this or other states, but a specimen sent from Kenosha county, Wisconsin, by Dr. J. J. Davis has proved to be this species. The species is especially characterized by the large teleutospores, and the brown, fusiform uredospores. Within the last month a fruiting specimen of the host has been found upon the type area, which shows it to be *Carex trichocarpa* Muhl. This in brief is the history of the rust up to the time of making the following cultures. Whether the aecidium, which has been found to grow on *Sambucus canadensis*, is the wide-spread *Aecidium sambuci* Schw., or not, it would be premature to say.

May 2, teleutospores from *Carex trichocarpa* sown on *Sambucus canadensis*; May 10, spermogonia; May 22, aecidia.

May 3, teleutospores from *C. trichocarpa* sown on *Xanthium canadense*; no infection.

May 3, teleutospores from *C. trichocarpa* sown on *Impatiens aurea*; no infection.

June 15, aecidiospores from *Sambucus canadensis* sown by Wm. Stuart on *Carex trichocarpa*; July 16, abundant uredospores first noticed, but probably not the first sori to appear.

SUMMARY.

During 1900 and 1901 the life cycle of the following eight species of rusts was demonstrated by cultures. Of these successful cultures, the first four have been previously reported, while the cycle of the second four is here reported for the first time.

1. UROMYCES EUPHORBIA C. & P. and Aecidium euphorbiae Amer. Auct. with sowings of aecidiospores and uredospores.
2. PUCCINIA CARICIS (Schum.) Reb. and Aecidium urticae Schum. with sowings of teleutospores.
3. PUCCINIA ANGUSTATA Pk. and Aecidium lycopi Ger. with sowings of teleutospores.
4. PUCCINIA POCULIFORMIS (Jacq.) Wettst. and Aecidium berberidis Pers. with sowings of teleutospores.
5. PUCCINIA ALBIPERIDIA Arth. and Aecidium albiperidum Arth. with sowings of teleutospores.
6. PUCCINIA CARICIS-ERIGERONTIS Arth. and Aecidium erigeronatum Schw. with sowings of teleutospores.
7. PUCCINIA CARICIS-ASTERIS Arth. and Aecidium asterum Schw. with sowings of teleutospores.
8. PUCCINIA BOLLEYANA Sacc. and Aecidium sambuci Schw. (?) with sowings of teleutospores and aecidiospores.

Purdue University, Lafayette, Ind., June, 1902.

OHIO FUNGI. FASCICLE IV

W. A. KELLERMAN, OHIO STATE UNIVERSITY.

The following species are included:

61. Aecidium cimicifugatum Schw., on Cimicifuga racemosa (L.) Nutt.
62. Aecidium ranunculi Schw., on Ranunculus abortivus L.
63. Albugo candidus (Pers.) Kuntze, on Camelina sativa (L.) Crantz.
64. Cercospora althaeina Sacc., on Althaea rosea Cav. (cultivated).
65. Cercospora hydropiperis (Thuem.) Speg., on Polygonum punctatum Ell.
66. Cintractia junci (Schw.) Trel., on Juncus tenuis Willd.
67. Gymnoconia interstitialis (Schlecht.) Lagh., on Rubus occidentalis L.
68. Plasmopara halstedii (Farl.) Berl. & De Toni, on Vitis sp., cultivated.
69. Puccinia caricis (Schum.) Reb., on Urtica gracilis Ait.
70. Puccinia caricis (Schum.) Reb., on Carex stricta Lam.
71. Puccinia caricis (Schum.) Reb., on Carex riparia Curtis.
72. Puccinia mariae-wilsoni Clint., on Claytonia virginica L.
73. Puccinia taraxaci Plowright, on Taraxacum taraxacum (L.) Karst.
74. Puccinia taraxaci Plowright, on Taraxacum erythrospermum Andr.
75. Rhytisma concavum Ell. & Kellerm., on Ilex verticillata (L.) Gray.
76. Rhytisma concavum Ell. & Kellerm., on Ilex verticillata (L.) Gray.
77. Septoria astericola E. & E., on Aster cordifolius L.
78. Septoria kalmiaecola (Schw.) B. & C., on Kalmia latifolia L.

79. *Urocystis carcinodes* (B. & C.) Fisch., on *Cimicifuga racemosa* (L.) Nutt.

80. *Venturia orbicula* (Schw.) C. & P., on *Quercus prinus* L.

Thanks for assistance are extended to Messrs. Arthur, Clinton, Ellis, Lloyd, Morgan, Ricker, and to all whose names appear on the labels as collectors.

61. *Aecidium cimicifugatum* Schw.

On *Cimicifuga racemosa* (L.) Nutt.

Sugar Grove, Fairfield Co., Ohio. May 30, 1902.

Coll. W. A. Kellerman.

"*Caeoma* (*Aecidium*) *Cimicifugatum*, L. v. S.

"*C. maculis magnis orbiculatis luteis bullatis. Pseudoperidiis in pagina inferiori, concentricis, longissimis, cylindricis, apice primum clausis, demum subfimbriatis. Sporidiis aurantiacis albescentibus.*" L. D. de Schweinitz, Transactions of the American Philosophical Society, Philadelphia, 4:293. 1834.

62. *Aecidium ranunculi* Schw.

On *Ranunculus abortivus* L.

Brush Lake, Champaign Co., Ohio. May 4, 1902.

Coll. J. H. Schaffner and F. J. Tyler.

"*Aecidium.*

"*Ranunculi* (abortivi). Frequens in foliis rotundis radicalibus, exers fere macula." L. D. de Schweinitz, Synopsis Fungorum Carolinae Superioris (excerpta), p. 41, No. 440, 1822. (Schrift. d. Nat. Gesellschaft zu Leipzig.)

63. *Albugo candidus* (Pers.) Kuntze.

On *Camelina sativa* (L.) Crantz.

Columbus, Ohio.

May 15, 1902.

Coll. F. J. Tyler.

"*UREDO CANDIDA: effusa candida.*

"*Aecidium candidum.* in Gmel. Syst. nat. Linn. 2, p. 1473." D. C. H. Persoon, Synopsis Methodica Fungorum, 1:223. 1801.

"*UREDO CHEIRANTHI: sparsa subglobosa prominens candida.*

"*Acervuli globose prominent, epidermide cingente clausi, dimidiam lineam lati. Ob formam distinctam ab antecedente remouendam duxi.*" D. C. H. Persoon, Synopsis Methodica Fungorum, 1:224. 1801.

64. *Cercospora althaeina* Sacc.

On *Althaea rosea* Cav. (Cultivated.)

Columbus, Ohio.

June 9, 1901.

Coll. W. A. Kellerman.

"*Cercospora althaeina* Sacc. sp. nova. Maculis amphigenis angulosis, brunneis, lyphis fasciculatis filiformibus, 40 x 5 (rarius usque 100 lgs.)

pauciseptatis, fusco-olivaceis; conidiis in hypharum apicibus cylindraceo-obclavatis, v. anguste fusoides, rectiusculus, 40-50 x 5, 2-4 septatis, apice obtusiusculus, hyalinus." P. A. Saccardo, *Michelia*, 1:269. 15 Januar, 1878.

65. *Cercospora hydropiperis* (Thuem.) Spieg.

Helminthosporium hydropiperis Thuem.; *Cercospora polygonorum* Cke.

On *Polygonum punctatum* Ell.

Columbus, Ohio. September 22, 1901.

Coll. W. A. Kellerman.

"*Helminthosporium Hydropiperis* Thuem. nov. spec.

"H. caespitibus hydrophyllis, plerumque folium totam occupans, velutinis, effusis, tenuibus, olivaceis, densis; hyphis erectis, subrectis, simplicibus, non vel vix septatis, tenuibus, brevibus, dilute fuscis; sporis longeclavatis, subcurvatis, apice dilatatis, vertice angustatis, subacutatis, 6-10 septatis ad septas non constrictis, cum nucleo hyalino unico in cellulis omnibus, dilute fuscis, 50-60 mm. long., 8-10 mm. crass." F. de Thuemen, *Mycotheca universalis*, no. 1087.

66. *Cintractia junci* (Schw.) Trel.

On *Juncus tenuis* Willd.

Brush Lake, Champaign Co., Ohio. May 30, 1902.

Coll. J. H. Schaffner and F. J. Tyler.

Caecoma (*Ustilago*) *Junci*, L. v. S.

"*C. aterrimum*, longitudinaliter in glumis effusum, primum tectum cortice quasi spurio nigronitido. Sporidiis minutissimis conglutinatis. An idem *Ustilago* in *Rhynchosporis* rarissime obvia, sporidiis majoribus." L. D. de Schweinitz, *Transactions of the American Philosophical Society*, Philadelphia. 4:290. 1834.

67. *Gymnoconia interstitialis* (Schlecht.) Lagh.

On *Rubus occidentalis* L.

Olena, Huron Co., Ohio. June 2, 1902.

Coll. O. E. Jennings.

The host occurred with *Rubus nigrobaccus* but the latter harbored none of the fungus.

Supplement to No. 20.

68. *Plasmopara halstedii* (Farl.) Berl. & De Toni.

Peronospora halstedii Farl.

On *Vitis* sp., cultivated.

Columbus, Ohio. June 6, 1901.

Coll. W. A. Kellerman.

"*P. halstedii* Farlow, Mycelium with oval haustoria. Conidio-phores rather stout, undivided below, above with numerous 1 to 4 pinnate

horizontal branches, the lower of which are considerably longer and more compound than the upper. Tips long, slender, acute, loosely diverging. Conidia oval or elliptic, 19-30 μ by 15-26 μ . Oospores 23-30 μ in diameter, yellowish, thin walled, exospore with a few folds or ridges." W. G. Farlow. Botanical Gazette, 8:310, October, 1883.

69. *Puccinia caricis* (Schum.) Reb.

Aecidium urticae Schum.

On *Urtica gracilis* Ait.

Carey, Wyandot Co., Ohio. May 20, 1902.

Coll. Thos. Bonser.

"*Aecidium Urticae*, orbiculare effusumque, elevatum purpureo croceatum; peridiis cupulaeformibus flavis, ore laciniato; laciniis crenulato-dentatis, obtusiusculis; pulvere citrino. In foliis et petiolis *Urticae dioicae*." Christ. Frieder. Schumacher, *Enumeratio plantarum in partibus Saellandiae Septentrionalis et orientalis*, 2:222. 1803.

70. *Puccinia caricis* (Schum.) Reb.

On *Carex stricta* Lam.

Columbus, Ohio. March 20, 1902.

Coll. W. A. Kellerman.

Sowings of the spores on *Urtica gracilis* Ait. produced aecidia.

Supplement to No. 69.

It is more than doubtful whether the following descriptions apply to the Rust here distributed; but since the name as given above has been used for the American species it seems best to present the original diagnoses.

"*Uredo caricis*, peridiis oblongis, pallido cinereis, distinctis rarius confluentibus paullulum elevatis; pulvere ferrugineo-badio." Christ. Frieder. Schumacher, *Enumeratio plantarum in partibus Saellandiae septentrionalis et orientalis*, 2:231. 1803.

"*Puccinia striola* L.

"*P. maculis pallidis, acervis linearibus confertis distinctis amphigenis subconvexis, sporidiis nigricantibus*." H. F. Link, *Species Plantarum*, 62:67. 1825.

Puccinia caricina DC.—Description given on label to Ohio Fungi No. 28.

71. *Puccinia caricis* (Schum.) Reb.

On *Carex riparia* Curtis.

Columbus, Ohio. April 17, 1902.

Coll. W. A. Kellerman.

Supplement to Nos. 69 and 70.

Species determined by culture experiments; sowings of the teleutospores on *Urtica gracilis* Ait. resulting in the production of spermogonia and aecidia.

72. *Puccinia mariae-wilsoni* Clint.On *Claytonia virginica* L.

Cincinnati, Ohio.

May 15, 1902.

Coll. Walter H. Aiken.

"P. *Mariae-Wilsoni* Clinton.

"Amphigenous; spots none; sori scattered or clustered, unequal, at first covered by the epidermis, then surrounded by its ruptured remains, reddish-brown; spores sub-elliptical, scarcely constricted, crowned with a pustule, .0013'-.0018' long, .0007'-.0008' broad." Chas. H. Peck, Report on the State Museum, State of New York, 25:115. 1872.

73. *Puccinia taraxaci* Plowright.On *Taraxacum taraxacum* (L.) Karst.

Columbus, Ohio.

June 10, 1902.

Coll. W. A. Kellerman.

"Puccinia taraxaci. Plow.

"*Spermogonia*.—On yellow oval or rounded spots. Paraphyses not conspicuous. Spermatia globose or oval, 1-2 μ in diameter.

"*Uredospores-Primary*: Sori scanty, large, dark, brown, elongated or circinating. Spores ovate, round, or subpyriform, echinulate, brown, 25-30 x 25 μ . *Secondary*: Sori small, very profuse, round, cinnamon-brown, soon pulverulent, often confluent. Spores subglobose, brown, echinulate, 20-25 μ in diameter.

"*Teleutospores*.—Sori amphigenous, minute, blackish, round, pulverulent, surrounded by the ruptured epidermis. Spores obtuse, shortly oval, ovoid, or even subglobose, constriction almost none, brown, echinulate, especially above, 30-40 x 20-25 μ . Pedicels short, hyaline, deciduous." Charles B. Plowright, A Monograph of the British Uredineae and Ustilagineae, 186. 1889.

74. *Puccinia taraxaci* Plowright.On *Taraxacum erythrospermum* Andr.

Columbus, Ohio.

May 18, 1902.

Coll. F. J. Tyler.

Supplement to No. 73.

75. *Rhytisma concavum* Ell. & Kellerm.On *Ilex verticillata* (L.) Gray.

West Mansfield, Logan Co., Ohio. June 10, 1902.

Coll. W. A. Kellerman.

"*Rhytisma concavum* Ell. & Kellerm. n. sp.—Stromata epiphyllous but also visible below, forming thin, black, thickly scattered blotches, 1-4 mm. diameter, orbicular or subangular, the surface uneven, surrounded by a pale yellowish, narrow margin, more or less concave below and the margin broader and paler, at maturity rupturing by radiating fissures, in the oblong forms a central elongated fissure also occurring and in the

larger ones a circular area being cut out, the hygroscopic lobes strongly recurved when moist exposing a light yellowish, later sordid yellow then blackish disk. Asci 80-110 x 8-10 μ , oblongate, much elongated below, strongly acute at apex, accompanied by abundant slender and elongated mostly flexuous paraphyses about 4 μ wide, usually enlarged at the tips. Spores 20-35 x 2-3 μ , hyaline, nearly straight to strongly curved, slightly thicker at one end in which are large clear granules." J. B. Ellis and W. A. Kellerman, Journal of Mycology, 8:51. June, 1902.

76. *Rhytisma concavum* Ell. & Kellerm.

On *Ilex verticillata* (L.) Gray.

West Mansfield, Logan Co., Ohio. July 19, 1901.

Coll. W. A. Kellerman.

Supplement to No. 75.

Stroma only; no asci.

77. *Septoria astericola* E. & E.

On *Aster cordifolius* L.

Columbus, Ohio. April 22, 1902.

Coll. W. A. Kellerman.

"*Septoria astericola*, n. s. — Spots amphigenous, dark brown, sub-indefinitely limited, bounded by a broad yellow border, the brown central part 3-4 millimeters across. Perithecia innate, finally partially erumpent above, numerous, scattered, small (75 μ). scarcely visible in the earlier stages of growth, light brown. Sporules slender, nearly straight, nucleate, 30-45 by 1-1½ μ . Differs from *S. atropurpurea*, Pk. in its yellow bordered spots and shorter, narrower sporules. J. B. Ellis and B. M. Everhart, Journal of Mycology, 5:150. 1889.

78. *Septoria kalmiæcola* (Schw.) B. & C.

On *Kalmia latifolia* L.

Sugar Grove, Fairfield Co., Ohio. May 17, 1902.

Coll. W. A. Kellerman.

"*Sphaeria* (Depazea) *Kalmicola*, L. v. S.

"*S. maculis candidis orbiculatis, margine intumescente cinctis, et folia circumcirca nigricantibus. Peritheciis convexis atris concentricis innatis.*" L. D. de Schweinitz, Transactions of the American Philosophical Society, Philadelphia, 4:226. 1834.

79. *Urocystis carcinodes* (B. & C.) Fisch.

On *Cimicifuga racemosa* (L.) Nutt.

Sugar Grove, Fairfield Co., Ohio. May 30, 1902.

Coll. W. A. Kellerman.

"*Thecaphora carcinodes*. B. & C. — Soris maximis ellipticis e ramulis tumentibus; sporis globosis cellulis 4-6 hyalinis cinctis.

"Sori large, swelling out in elliptical masses; spores globose, surrounded by from four to six hyaline cells." M. J. Berkeley, Grevillea, 3:58. December, 1874.

80. *Venturia orbicula* (Schw.) C. & P.

On *Quercus prinus*. L.

Sugar Grove, Fairfield Co., Ohio. May 17, 1901.

Coll. W. A. Kellerman and Clara G. Mark.

"*Sphaeria orbicula*, L. v. S.

"S. in maculis exacte orbiculatis, margine quasi linea nigra limitatis, ob aggregationem perithecorum in margine perithecia numerosa aggregata sunt. Maculis $\frac{1}{4}$ uncialibus diametro, cinerascentibus. Peritheciis minutissimus, innatis, nigris, prominentibus pilis longis sparsis obsitis, demum deciduis, concoloribus." L. D. de Schweinitz, Transactions of the American Philosophical Society, Philadelphia, 4:224. 1834.

NEW ALABAMA FUNGI

BY J. B. ELLIS AND B. M. EVERHART.

The following fungi were collected in the vicinity of Tuskegee, Alabama, by George W. Carver, Director of the Department of Agriculture and Agricultural Experiment Station at Tuskegee, Ala.

PHYLOSTICTA RICHARDSONIAE E. & E.—On leaves of *Richardsonia scabra*, Tuskegee, Ala. Aug. 1901.

Perithecia amphigenous, on irregularly shaped, dirty white spots and bleached areas of the leaves, mostly occupying and killing the tips of the leaves, perithecia scattered, globose, 80-110 μ diam., pierced above. Sporules oblong-elliptical, abundant, $4 \times 1\frac{1}{2}$ μ .

PHOMA APOCRYPTA E. & E.—On dead stems of *Phytolacca decandra*, Tuskegee, Ala. Oct. 1900 (Carver 704).

Perithecia subcuticular, raising the epidermis into little pustules pierced by the subconical ostium, globose, 150-200 μ diam., scattered or often three or more approximated, or sometimes seriatly arranged and splitting the epidermis in clefts or cracks 2-3 mm. in length. Sporules elliptical or ovoid, 1-2 nucleate, with a slight smoky tinge, $3-4 \times 1\frac{1}{2}-2$ μ .

Its much smaller sporules as well as its pseudo-stromatic habit will separate it from *P. herbarum* West. and from *P. phytolaccae* B. & C. May be the spermogonial stage of *Diaporthe aculeata* Schw.

PHOMA ZEICOLA E. & E.—Bull. Torr. Bot. Club, 27:573. 1900. Specimens recently sent show that the perithecia appear at first on definite, pallid spots, which finally become confluent.

MACROPHOMA SUBCONICA E. & E.—Jour. Mycol. 5:147, 1889. Mr. Carver has sent what we now refer to this species on the following hosts—On *Luffa acutangula* (dried pericarp), spor. $15-22 \times 10-12 \mu$; on *Dolichos sinensis*, spor. $15-20 \times 10-11 \mu$; on *Melia azederach*; *Pelargonium zonale*, and *Cassia tora*, spor. $15-22 \times 5-7 \mu$; on *Mucuna utilis*, spor. $15-18 \times 12-14 \mu$.

The perithecia vary from $120-400 \mu$ in diameter, with a distinct conic-papilliform ostiolum, and become depressed and flattened or collapse to concave. The ostiolum is soon deciduous leaving the perithecium perforated.

APOSPHAERIA TURMALIS E. & E.—On weatherbeaten wood of *Diospyros virginiana*.

Perithecia superficial, densely crowded and angular from mutual pressure, forming a continuous crust several centimeters in extent, ovate, globose, $300-400 \mu$ diam. with an obscure papilliform ostiolum. Sporules ovate or piriform, hyaline, filled with small nuclei, $15-20 \times 10-12 \mu$.

DOTHIORELLA MAJOR E. & E.—On dead stems of *Gossypium herbaceum*.

Perithecia in clusters of 3-8, stromatically connected and surrounded by the ruptured epidermis, with a few scattered singly, globose, $\frac{1}{4}-\frac{1}{2}$ mm. diam. Sporules oblong-elliptical or ovate, $20-22 \times 12 \mu$, on basidia of about the same length, others (sterile basidia) are longer than the sporules and resemble paraphyses.

D. botryosphaerioides Sacc. on the same host has sporules only $8 \times 3 \mu$.

SPHAEROPSIS GRANDIFLORA E. & E.—On dead leaves of *Magnolia grandiflora*.

Perithecia scattered quite evenly over the upper side of the leaf, raising the cuticle into little pustules, $99-110 \mu$ diam., perforated at the apex. Sporules oblong-elliptical, $15-20 \times 8-10 \mu$.

SPHAEROPSIS SABALICOLA Ell. & Carver.—On *Sabal andersonii*, Beloit, Ala.

Perithecia gregarious, $150-200 \mu$ diam., often subseriate, 2-4 in a short line, splitting the epidermis over them but hardly confluent, suberumpent, finally deciduous. Sporules oblong-elliptical, $15-22 \times 9-11 \mu$, on rather slender basidia about as long as the spores.

SPHAEROPSIS BEGONIICOLA E. & E.—On *Begonia*, cultivated.

Perithecia hypophyllous, on dead, indefinitely limited areas of the leaves, hemispheric-prominent, finally collapsing, large (400-500 μ), carbonaceo-membranaceous, with a distinct tuberculo-papilliform ostiolum. Sporules elliptical, $15-22 \times 12 \mu$ nearly hyaline at first, filled with granular matter becoming brown.

HAPLOSPORELLA GRANDINEA E. & E.—On dead limbs of *Magnolia glauca*.

Stromata small, thickly scattered, $\frac{1}{2}$ -1 mm. diam., sunk in the bark, raising the epidermis into pustules and rupturing it but not erumpent. Perithecia 2-6 in a stroma, 150-200 μ diam., with a papilliform ostium, sometimes scattered singly in the bark. Sporules oblong-elliptical, 15-20x8-11 μ .

H. mexicana E. & E.—(Bull. Torr. Bot. Club. 22:440. 1895) differs from this in its larger, seriate, carnose, erumpent stromata.

HAPLOSPORELLA JASMINI E. & E.—On dead limbs of *Jasminum fruticans*.

Perithecia ovate, bursting out through the bark in clusters of 6-20 and loosely surrounded by the lobes of the ruptured epidermis. Sporules oblong-elliptical or ovate, 18-20x8-11 μ .

DIPLODIA ATROCOERULEA E. & E.—On dead stems of *Datura stramonium*.

Perithecia innate, the apex erumpent, discharging the ovate-elliptical, dark brown, 12-22x12 μ spores abundantly, and blackening the surface of the stem.

Accompanied by a *Helminthosporium* (*H. socium* E. & E. in herb.) with elongate-elliptical, 3-septate, pale yellow conidia, 30-50x12-15 μ . The sporules are more or less distinctly longitudinally striate.

BOTRYODIPLODIA MELLAE E. & E.—*Diplodia mellae* E. & E. Bull. Torr. Bot. Club. 25:288. 1897. *Diplodia langloisii* Sacc. & Syd., Sacc. Syll. 14:929. 1897. On dead limbs of *Melia azedarach*, Louisiana (Langlois), Alabama (Carver).

Perithecia globose or ovate, 150-200 μ diam., 3-15 in a flatish-verruciform stroma, $\frac{1}{2}$ -1 mm. diam., closely covered by the irregularly ruptured but closely adherent epidermis, black inside and of a waxy or subcarnose consistency; ostioli papilliform. Sporules oblong-elliptical, more or less distinctly constricted, 15-20x8-10 μ .

The Louisiana specimens which were published in the Torr. Bull. as *Diplodia* were not as well developed as those from Alabama but a re-examination of the species in Herb. Everhart shows that the stromatic arrangement of the perithecia is the normal condition, although in specimens from both of the localities named, perithecia scattered singly occur.

BOTRYODIPLODIA PALLIDA E. & E.—On dead stems of *Glycine hispida*.

Perithecia collected in little groups 3-8 in a more or less evident stroma, ovate globose, 250-300 μ diam., the papilliform ostium and generally the apex of the perithecium projecting slightly above the stroma. Sporules oblong-elliptical, obtuse, hyaline and continuous at first, tardily becoming brown and uni-septate, 20-26x12 μ in the hyaline state, a little smaller when mature and brown; basidia about as long as the sporules.

LASIODIPLODIA TUBERICOLA E. & E.—Bot. Gaz. 21:92. 1896.
On cotton-balls. This has been sent by Mr. Carter on the following hosts: On beets, tomatoes, egg-plant, old corn husks, and on a rind of Crookneck-squash, indicating that it is indigenous to this country and not imported.

SEPTORIA CYPERI E. & E.—On *Cyperus* sp. Tuskegee, Ala. Aug. 1900.

Perithecia at first on small rust-colored spots on the living leaves, but when these become dead, scattered irregularly, suberumpent, 150-200 μ diam. Sporules filiform, continuous, curved, 80-120x2 μ .

HENDERSONIA OPUNTIAE E. & E.—On *Opuntia ficus indica*.

Perithecia gregarious, pustuliform, 150-200 μ diam. Sporules cylindrical, slightly curved, 3-septate, brown, 20-25x4-5 μ , ends obtuse.

COLLETOTRICHUM CARVERI E. & E.—On leaves of tea plant, cult.

Acervuli epiphyllous, on dead, brown areas of the leaf, erumpent, amber-colored, $\frac{1}{4}$ - $\frac{1}{2}$ mm. diam., sparingly girt around the base with weak, brown, continuous, bristle-like hairs, slightly swollen at the base and 40-80x3 μ . Conidia oblong-cylindrical, 12-15x3 $\frac{1}{2}$ -5 μ , obtusely rounded at the ends.

COLLETOTRICHUM PHYLLOCACTI E. & E.—On *Phyllocactus latifrons*.

Spots brown, whitening out, large, 3-4 cm. across with a narrow raised concolorous margin. Acervuli in groups both on the spots and on adjacent areas of the leaf, erumpent, black, surrounded with a fringe of dark-colored continuous bristles, 30-40x3-3 $\frac{1}{2}$ μ , tapering above. Conidia oblong-elliptical, or oblong-cylindrical, granular, continuous, hyaline, 10-12x3 $\frac{1}{2}$ -4 μ , on basidia longer than the conidia.

Differs from *C. carveri* E. & E. in its smaller conidia and shorter, subundulate bristles.

GLOEOSPORIUM AMARANTHI E. & E.—On dead stems of *Amaranthus spinosus*.

Acervuli subcuticular, raising the epidermis into pustules, then suberumpent, discharging the conidia in a flesh-colored globule, seated on elongated, blackened strips on the stem. Conidia oblong-elliptical, 2-nucleate, 12-15x5-6 μ .

PESTALOTZIA BATATAE E. & E.—On tubers of *Batatas edulis*.

Acervuli raising the cuticle into hemispherical pustules which roughen the surface of the tuber. Conidia clavate-oblong, 20x5-6 μ , terminal cells hyaline, acutely conical, intermediate cells brown, apical cell surmounted by a crust of three spreading, hyaline bristles about 12 μ long, pedicels becoming oblique.

The conidia are hardly distinguishable from those of *P. guepini* Desm. which is found around Tuskegee on leaves of *Rosa*, *Vitis*, *Ulmus*, *Liriodendron*, *Sassafras* and *Diospyros*.

VENTURIA NEBULOSA E. & E.—On dead leaves of *Eragrostis* sp.

Amphigenous. Perithecia ovate-globose, 75-100 μ diam., pierced above, membranaceous, clothed with black, continuous, spreading hairs 30-40x3 μ , seated on cloudy or smoky, elliptical spots 2-5 mm. diam. or by confluence more. Asci oblong, abruptly constricted at base into a short stipe, paraphysate, 35-45x12-15 μ . Sporidia biserial, oblong-ovate, hyaline, uniseptate, slightly constricted, 12-15x5 μ .

Differs from *V. erysiphoides* E. & E. in its more abundant, shorter and narrower bristles and different sporidia and from *V. graminicola* Winter in its broader, shorter sporidia.

NECTRIA SECALINA E. & E.—On dead culms of *Secale cereale*.

Perithecia gregarious, ovate-globose, 100-120 μ diam., orange yellow, sometimes slightly collapsed but not very distinctly so, ostiolum papilliform, minute, inconspicuous; Asci clavate-cylindrical sessile, paraphysate, 40-55x7-8 μ , Sporidia subbiserial, oblong or oblong-elliptical, uniseptate, scarcely constricted, hyaline, 7-10x3-4 μ .

Differs from *N. gibberelloides* E. & E. and from *N. brassicae* & *S. E.* in its orange color and rather smaller, straight sporidia.

NECTRIELLA CACTI E. & E.—On *Opuntia ficus indica*.

Perithecia gregarious, bright blood-red, soft, ovate 200 μ high, 110 μ broad. Asci subanceolate, 45-55x4 μ ; paraphyses obscure. Sporidia biserial, oblong, hyaline, continuous, 5-6x1½ μ .

Outwardly resembles *Nectria sanguinea* (Sibth.) but the sporidia are very different; nor can it be mistaken for *N. opuntiae* Roll. in Sacc. Syll 14:632.

ZIGNOELLA SABALINA E. & E.—On petioles of *Sabal adansonii*.

Perithecia superficial, gregarious or subcespitose, ovate, rough, collapsing, 300-350 μ diam., with a papilliform ostiolum. Asci clavate-cylindrical, 45-60x10-12 μ , sessile, paraphysate. Sporidia fusoid, subinequilateral or slightly curved, hyaline, 3-septate, scarcely constricted, 15-20x4½-5 μ . The sporidia scarcely differ from those of *Metasphaeria palmetto* Cke.

LAESTADIA PRENANTHIS E. & E.—On living leaves of *Prenanthus crepidinea*. Aug. 1901.

Spots elliptical or irregular, 3-5 mm. diam., partly limited by the veinlets, light brown, with a narrow, slightly raised border. Perithecia hypophyllous, scattered on the spots, semierum-

pent, minute, (50-60 μ), pierced above. Asci oblong, subsessile, rather abruptly narrowed at the ends, 30-35x6-7 μ . Sporidia biseriate, fusoid-oblong, 3-guttulate, hyaline, 10-12x3-3½ μ .

LAESTADIA ARI E. & E.—On living leaves of *Arum arifolium*.

Spots subcircular, dark gray above, deep brown below, 1 cm. diam., with a narrow darker border; perithecia epiphyllous, abundant, evenly and thickly scattered over the central portion of the spots, 100-110 μ diam., pierced above, semi-erumpent. Asci oblong-cylindrical, short-stipitate, 40-50x7-8 μ , paraphyses rudimentary or wanting. Sporidia biseriate, subnavicular, 2-3-nucleate, hyaline, obtuse, 8-10x3½-4½ μ .

Vermicularia trichella Fr. is found in a narrow belt just within the margin of the spots.

SPHAERELLA YUCCAE E. & E.—On leaves of *Yucca filamentosa*.

Perithecia evenly scattered on the dead leaves, subcuticular, slightly raising the epidermis, at length more or less collapsing, small (110-120 μ). Asci clavate-cylindrical, short-stipitate, 45-55x10-12 μ . Sporidia biseriate, short, oblong-fusoid, 12-15x4-5 μ , uniseptate but not perceptibly constricted.

DIDYMELLA RICINI E. & E.—Proc. Phil. Acad. 421. 1895. Prof. Carver sends this on dead shoots of *Ailanthus glandulosa*; the asci 45-50x10-12 μ , spor. oblong-elliptical, obtuse, yellowish-hyaline, scarcely curved, 12-15x5-6 μ ; on stems of *Mucuna utilis*, asci 40-45x8-10 μ , spor. oblong-fusoid, distinctly curved, 12-15x4-5½ μ , yellowish-hyaline, becoming uniseptate; on *Hibiscus esculentus*, asci 50x10 μ , spor. curved, yellowish, 12-15x4-4½ μ , 2-3 guttulate (becoming uniseptate).

The perithecia in all these collapse. This is closely allied to *D. sphaerellula* (Pk.) and *D. fuschiae* (Ck. & Hark.).

PHYSALOSPORA VAGANS E. & E.—On dead, bleached canes of *Rubus strigosus*.

Perithecia scattered, singly or 3-5 subconfluent, membranaceous, of rather coarse cellular structure, black, pierced above, 100-200 μ diam., raising the cuticle into little pustules which, especially over the clustered perithecia, are ruptured by a narrow cleft. Asci clavate-cylindrical, 110-200x12-20 μ , short-stipitate and obscurely paraphysate. Sporidia uniseriate in the narrower asci, biseriate in the broader, elliptical, 12-20x8-12 μ hyaline. The asci soon collapse so that the sporidia bulge out all round like a bag stuffed full of apples. Many of the perithecia, especially the scattered, single ones, contain only stylospores narrow-elliptical, hyaline, 15-20x7-8 μ , on basidia 12-20x1½ μ .

PHYSALOSPORA OBTUSA (Schw.) Cke.—On *Rubus villosus*, has longer, narrower sporidia 35-40x9 μ . This occurs also on the following hosts: on dead stems of spiraea—asci 150x20-25 μ , spor.

18-25x10-12 μ ; on *Hemerocallis*—asci 90-150x12-15 μ spor. 20-24x8-10 μ ; on *Polygonum pennsylvanicum*—asci 100x15 μ , spor. average 15x10 μ .

PHOMATOSPORA WISTARIAE E. & E.—On partly dead leaves of *Wistaria frutescens*.

Perithecia mostly epiphyllous, on small, mostly round, gray spots, 2-4 mm. diam., bounded by a narrow dark line; but often confluent over a great part of the leaf, subdepressed, membranaceous, 110-120 μ . Asci oblong, sessile, 35-45x10-12 μ , without paraphyses. Sporidia biseriate oblong-elliptical, hyaline, rounded at the ends, about 12x6 μ .

METASPHAERIA IPOMOEAE E. & E.—On dead stems of *Ipomoea*.

Perithecia scattered or 2-3 together, subcuticular, then emergent and mostly collapsing, $\frac{1}{2}$ - $\frac{3}{4}$ mm. diam. with a distinct papilliform ostiolum. Asci clavate, short-stipitate, 75-90x10-14 μ , with filiform paraphyses. Sporidia overlapping and crowded, often biseriate above, elongate-ovate or broad fusoid-clavate, 3-4 septate and constricted especially at the next to the upper septum, 15-25 (mostly about 20) x8-12 μ .

Comes very near *M. kali* (Fabr.) according to his description and figure, differing principally in its subaggregated perithecia.

METASPHAERIA CARVERI E. & E.—On dead stems of *Sesamum orientale*, *Glycine hispida*, *Cassia tora* and *Mucuna utilis*.

Perithecia thickly scattered or gregarious, occasionally cespitose-conglomerate, semierumpent but mostly remaining covered by thin cuticle, depressed-hemispherical when fresh, wrinkled and collapsed when dry, 120-200 μ diam. of thin membranaceous texture, pierced above. Asci oblong, short-stipitate, 50-55x8-12 μ , paraphyses evanescent. Sporidia biseriate, oblong-cylindrical, moderately curved, hyaline, 15-20x4-5 μ , ends obtuse, contents granular, with 3-4 nuclei (becoming 2-3 septate?).

Has the general appearance of *Vermicularia*.

METASPHAERIA SANGUINEA E. & E.—On dead stems of *Helinium tenuifolium*.

Perithecia subcuticular, scattered or 2-3 together, membranaceous, and finally collapsing, about 200 μ diam., raising the red-stained cuticle into pustules which are soon ruptured at the apex; ostiolum papilliform, inconspicuous. Asci clavate-cylindrical, 50-70x7-8 μ , paraphysate. Sporidia biseriate (mostly), narrow-elliptical, or subfusoid, hyaline, 4-nucleate, becoming 3-septate, 15-18x4 μ .

The perithecia are sparingly clothed with loose, spreading blood-colored hyphae 40-80x3 μ .

BOTRYOSPHAERIA MURICULATA E. & E.—On dead stems of a white berried *Smilax*.

Perithecia $\frac{1}{4}$ - $\frac{1}{3}$ mm. diam., 2-6 together in a cortical stroma, white inside, contracted above into slender necks, the papilliform ostioli raising the blackened epidermis into little tubercles mostly ruptured across the top by a single hysteriform slit. Asci clavate-cylindrical, short-stipitate, paraphysate, p. sp. 75-80x18-20 μ . Sporidia biseriate, oblong-elliptical, subinequilateral, rounded at the ends or obtusely pointed, 20-25x10-12 μ .

The surface of the bark occupied by the fungus is over-spread by a thin black, finely muriculate crust presenting under the lens quite an ornamental appearance.

HYSTERIUM COMPRESSUM E. & E.—On decaying wood of *Pinus palustris*.

Perithecia scattered, mostly lying parallel, 1-3 mm. long, $\frac{1}{2}$ mm. broad, straight or in the elongate forms undulate or curved, faintly longitudinally striate above, narrow at the ends but sub-obtuse, lips closed or slightly opened. Asci oblong-cylindrical, short-stipitate, 75-80x15-20 μ , broadly rounded above, paraphyses filiform, abundant. Sporidia crowded bi-tri-seriate, fusoid, 3-septate, scarcely constricted, hyaline at first, soon brown (reddish-brown), subinequilateral, slightly curved, compressed, 25-30x7-10 μ , cell next to the upper one very slightly swollen.

The perithecia scarcely differ from those of *H. insidens* Schw. but the sporidia are constantly only 3-septate and are compressed so as to be only 4-5 μ thick.

MOLLISIA ALABAMAENSIS E. & E.—On decaying canes of *Rubus villosus*.

Scattered, erumpent-superficial, gelatin-carnose, immarginate, $\frac{1}{2}$ mm. diam., convex when fresh and pale-rose-color, subconcave when dry and about the color of lean beef steak, finally becoming almost black. Asci ventricose-oblong, subsessile, 60-65x15 μ , paraphyses enlarged and colored above, united in a brown epithecium and bearing subglobose conidia 5 μ diam. Sporidia sub-seriate, hyaline, 12-13x6-7 μ .

Allied to *Mollisia fuscorubra* Rehm. which it much resembles.

BELONIUM BICOLOR E. & E.—On dead stems of *Eupatorium*.

Ascomata scattered or gregarious, sessile of soft carnosose substance, convex and amber color when young and fresh, concave and nearly black when dry, $\frac{1}{2}$ - $\frac{3}{4}$ mm. diam., margin narrow, subdentate, the substance of the ascomata yellow when crushed under the microscope. Asci clavate-cylindrical, short-stipitate, 80-90x12 μ , with stout simple paraphyses slightly thickened above. Sporidia mostly uniseriate, oblong-elliptical, 15-20x6-8 μ , 3-4-nucleate becoming 3-septate, hyaline at first becoming dull yellow and more or less constricted when mature.

The sporidia are more like those of *Dermatella* but the other characters are those of *Belonium*.

BELONIUM CONSANGUINEUM E. & E.—On decorticated, decaying wood of *Ilex*.

Ascomata gregarious, sessile, slightly narrowed at the base, black, mostly a little less than $\frac{1}{2}$ mm. diam., soft-carnose, disk circular roughish, margin narrow, slightly toothed, convex and dull amber color when young and fresh, concave and nearly black when dry, substance dull yellow under the microscope. Asci clavate-cylindrical, short-stipitate, $45-55 \times 6-8 \mu$, paraphyses simple, stout, longer than the asci. Sporidia biseriate, fusoid, hyaline, slightly curved, 4-nucleate, becoming 3-septate, scarcely constricted, $15-20 \times 3\frac{1}{2}-4 \mu$.

Differs from *B. bicolor* in its smaller size, cellular-fibrose texture and narrower, sessile base. The asci also are shorter and narrower, and the sporidia only about half as broad.

GODRONIA RUGOSA E. & E.—On dead limbs of *Oxydendrum arboreum*.

Ascomata scattered, erumpent, $1-1\frac{1}{2}$ mm. diam., sessile, closely embraced by the ruptured epidermis, hymenium when moist subgelatinous, turgid and rugose, obscurely glandular-roughened, sooty-black, lighter within. Asci clavate-cylindrical, $70-75 \times 8-10 \mu$, paraphyses abundant, united above in a sooty-olivaceous epithecium. Sporidia elongated, fusoid, nucleate, arcuate when free, hyaline with a faint tinge of yellow, $45-55 \times 3-3\frac{1}{2} \mu$.

The scanty glandular pubescence of the hymenium would indicate *Belonium*, but the members of that genus are mostly on Gramineae or on herbaceous plants.

PLASMOPORA VINCETOXICI E. & E.—On leaves of *Vincetoxicum*.

Hypophyllous, forming loose white woolly patches 3-4 mm. across, at length subconfluent, the upper side of the leaf opposite becoming brown. Conidiophorous hyphae continuous, 8-10 μ thick, branched above, the branches issuing at a right angle and sending out short secondary branches with brownish, conical sterigmata 8-10 μ long, both lateral and terminal. Conidia globose or short-elliptical, averaging about $15 \times 13 \mu$. Oospores globose, brown, about 20 μ diam.

CERCOSPORA CAPREOLATA E. & E.—On leaves of *Bignonia capreolata*.

Spots reddish-brown with a reddish-purple shaded margin, $\frac{1}{2}-1$ cm. diam., hyphae hypophyllous in the central portion of the spots, arising in small spreading tufts from a small tuber-base, $15-20 \times 3 \mu$, continuous, pale brown. Conidia slender, obclavate, continuous, brownish, slightly curved, $60-80 \times 3 \mu$.

Very different from *C. bignoniicola* Speg.

CERCOSPORA HIERACII E. & E.—On leaves of *Hieracium venosum*.

Epiphyllous, on pale yellowish, indefinite spots at first, but soon spreading over the entire surface of the leaf, forming a thin, mouse-colored stratum, the spots now being scarcely recognizable. Hyphae in dense tufts, $15-20 \times 3 \mu$, subnodulose, continuous, or faintly septate, obtuse at the apex, subolivaceous, Conidia slender, obclavate, with a slight olivaceous tinge, slightly curved, $50-80 \times 2\frac{1}{2}-3 \mu$, faintly 3-5-septate.

CERCOSPORA SESSILIS E. & E.—On (dead)? leaves of *Populus monilifera*. Beloit, Ala. Sept. 1901.

Epiphyllous; conidia fasciculate, sessile (or nearly so) on a minute, sphaeriform base, curved or undulate, $20-60 \times 3 \mu$, olivaceous, guttulate, becoming 3-or more-septate.

On the same leaves are many small grayish-white spots but the *Cercospora* is on the dark colored part of the leaf and not on the spots though it may partly overrun some of them.

C. populina E. & E. (Jour. Mycol. 3:20) is on definite spots and is different from this.

CERCOSPORA GRATIOLAE E. & E.—On *Gratiola pilosa*.

Hyphae cespitose, short ($25-35 \times 3 \mu$), continuous, brown, somewhat crisped and toothed above, tufts effused, forming an olivaceous layer over the lower side of the leaves, but not on any spots. Conidia cylindrical, olivaceous, nucleate, becoming about 5-septate, $60-75 \times 3\frac{1}{2}-4 \mu$.

CERCOSPORA HYDRANGEAE E. & E.—On leaves of *Hydrangea* cult.

Spots amphigenous, subangular, more or less confluent so as to cover a greater part of the leaf, rusty-brown becoming dark brown. The brown spots become pale silver gray in the center on both sides of the leaf and on these gray spots the tufts of hyphae are sparingly scattered. Hyphae nodulose and geniculate, brown, simple, continuous or 1-2-septate below, subdentate at the tips, $40-60 \times 3\frac{1}{2}-4 \mu$. Conidia slender obclavate, hyaline, faintly septate towards the thick end, $60-80 \times 3\frac{1}{2}-4 \mu$.

CERCOSPORA OXYDENDRI E. & E.—On leaves of *Oxydendrum arboreum*.

Leaves at first mottled with dull red, more distinctly so above, the red areas bounded at first by the veinlets, soon confluent over a great part of the leaf, here and there forming distinct, indefinitely limited spots of a deep-brown color, one or more centimetres in extent. Hyphae tufted, short, the tufts becoming almost black, especially above, of a lighter color but not so abundant below. Conidia slender, obclavate-cylindrical, 3-5-septate, subolivaceous, $50-75 \times 3-4 \mu$, mostly a little curved.

CERCOSPORA BRACHYPUS E. & E.—On leaves of *Vitis rotundifolia*.

Hypophyllous on brown, dead areas of the leaves. Hyphae mere conical points on a brown, sphaeriform base, bearing abundant, slender, curved, faintly nucleate, nearly hyaline conidia, acute at each end and $50-70 \times 2\frac{1}{2}-3 \mu$.

Very distinct from all the other species described on *Vitis*. The effused tufts look like a thin, mouse-colored down.

CERCOSPORA TAGETICOLA E. & E.—On leaves of *Tagetes patula* which it soon blackens and kills.

Hyphae in loose, spreading tufts, $200-300 \times 4 \mu$, geniculate and septate. Conidia filiform about as long as the hyphae, thickened, 6-8-septate near the base and when well developed, constricted at the septa and $5-6 \mu$ thick.

Differs from the original *C. canescens* E. & M. principally in its longer hyphae and conidia.

CERCOSPORA CYDONIAE E. & E.—On leaves of *Cydonia japonica*.

Spots amphigenous, irregular in outline, 1-3 mm. diam., definite but without any raised border, subconfluent, dark brown, almost black above; hyphae epiphyllous, tufted, short, $15-20 \times 2\frac{1}{2}-3 \mu$, continuous, subgeniculate, pale-yellowish under the microscope. Conidia mostly curved, subcylindrical, hyaline or with a very faint shade of yellow, $30-45 \times 2\frac{1}{2} \mu$, nucleolate, becoming 1-3 septate.

Under the pocket lens the tufts of hyphae with the conidia appear like minute cinerous specks.

CERCOSPORA RICHARDSONIAE E. & E.—On leaves of *Richardsonia scabra*.

Hyphae amphigenous, tufts effused more or less over the entire leaf, forming an olivaceous coat, few in a tuft, subundulate above and sparingly toothed, continuous or sparingly septate, $20-40 \times 3-3\frac{1}{2} \mu$. Conidia long and slender, gradually attenuated above, faintly 3-5-septate, with a slight yellowish tint, $75-90 \times 3 \mu$.

CERCOSPORA MACLURAE E. & E.—On living leaves of *Maclura aurantiaca*.

Hypophyllous, forming irregularly shaped, olive-green patches 2-4 mm., diam., partly limited by the veinlets of the leaf but not on any definite spots; hyphae cespitose, short ($8-10 \times 5 \mu$), continuous, nearly hyaline. Conidia obclavate, the lower broader part olive brown, 5-7-septate and slightly constricted at the septa, abruptly contracted above into a cylindrical, subhyaline beak which forms about half the length of the spore.

CERCOSPORA SEDI E. & E.—On living leaves of *Sedum* sp.

Amphigenous, effused, giving the leaves a smoky look. Hyphae fasciculate, continuous or faintly septate more or less sinuous or crooked, short, $15-25 \times 4 \mu$. Conidia straight, guttulate, $30-110 \times 2\frac{1}{2}-3 \mu$ with a slight brownish tint.

CERCOSPORA VINCETOXICI E. & E.—On leaves of *Vincetoxicum hirsutum*.

Spots subcircular, reddish-brown, 4-10 mm. diam., with a narrow slightly raised, concolorous margin. Fertile hyphae amphigenous, simple, erect, continuous, $15-20 \times 3 \mu$, brownish, slightly toothed or entire above, densely cespitose, the tufts effused and forming a slate-colored layer covering the central area of the spots. Conidia oblong 20-30 or elongated $30-60 \times 3 \mu$, slightly colored, continuous.

CERCOSPORA CANESCENS E. & M.—Am. Nat. 1003. 1882. Mr. Carver sends this on dead stems of *Lycopersicum esculentum*, *Petunia parviflora* and on leaves of *Ricinus communis* and *Amaranthus*. The hyphae which are crowded in dense tufts are at first cylindrical, straight and truncate at the apex but in the more elongated ones they sometimes become geniculate and some of them branched. The conidia often reach 300μ long and become 10-12 (or more) septate. They are quite perfectly hyaline and are so abundant as to give the tufts a light-gray appearance.

STEMPHYLIUM COPALLINUM E. & E.—On leaves of *Rhus copallina*.

Hyphae creeping, loosely and irregularly branched, not interwoven, brown, sparingly septate, 4-5 μ thick. Conidia subglobose, 20-25 μ diam., mostly 4-celled with two septa at right angles to each other, some of them 5-6-celled, pale brown at first, then opaque, nearly sessile and lateral.

S. epochniodeum (Berk.) has the conidia much smaller and the hyphae hyaline.

VERMICULARIA OBLONGISPORA E. & E.—On dead stems of *Portulaca oleracea*, Tuskegee, Ala. June 1901.

Perithecia 80-110 μ diam., thin membranaceous, sparingly clothed with short ($20-50 \times 3 \mu$) brown, continuous hairs mostly curved or irregularly bent. Sporules oblong, obtuse, $11-14 \times 3-4 \mu$, on basidia longer than the sporules.

VERMICULARIA RUGULOSA E. & E.—On dead stems of *Rumex crispus*, Tuskegee, Ala. Aug. 1900.

Perithecia scattered, superficial, about $\frac{1}{2}$ mm. diam. membranaceous, rugulose, rather sparingly clothed especially around the base and sides with straight, rather short (90-120) black bristle-like hairs. Sporules oblong-fusoid, hyaline, straight, subobtuse, continuous, $13-15 \times 2 \mu$.

Different from *V. orthospora* Sacc. or *V. rectispora* Cke.

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NOTES

CORRECTIONS — The word "species" should be changed to "specimens on p. 15, 2d line, and on p. 16, 13th line; "Kanensis" to "Kansensis," p. 17, 10th line; "Anthiscus" on p. 25, 3rd and 6th, and on p. 35, 19th and 21st lines to "Anthicus"; "Philonthus" on p. 34, 2d line from bottom, to "Philonthus"; "Laccapholus" to "Laccophilus" on p. 31, 14th line.

The price of the journal of Mycology to Foreign subscribers is one dollar and ten cents (\$1.10). Subscriptions are solicited.

The third No. of Vol. 8 will be issued the first day of October, 1902. Contributors are asked to forward MS. the first day of September.

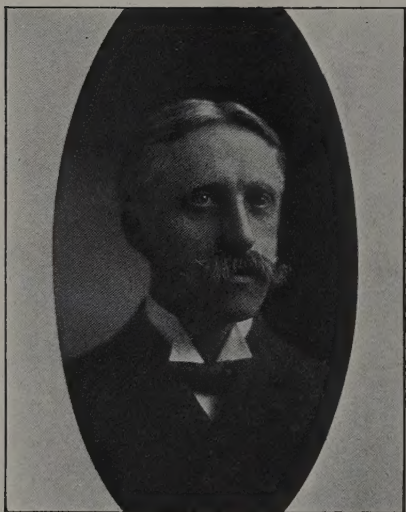
For the cordial reception of the May number of the Journal of Mycology the editor wishes to express grateful acknowl-

edgement to all of the American botanists; and furthermore begs the co-operation of mycologists to the end that the Journal may merit in the future their continued commendation.

It is intended to continue the series of "Journal of Mycology Portraits with Facsimile Autographs"—a host of American mycologists deserving recognition. Extra copies will be printed and the portraits may be obtained at ten cents each.

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Thanks are extended to the several mycologists who have kindly forwarded interesting and important MS., but sincere regrets are expressed that the articles could not, notwithstanding the increased number of pages, appear in the present No. A considerable and doubtless permanent enlargement of the JOURNAL seems to be necessary.



Very truly yours
J.C. Arthur